III SEMESTER
Course No.: 5 - Basic Principles of Aquaculture
credits :3

COURSE OUTCOMES

Co1 Understand the concept of blue revolution, analyse the history and compare the present status of aquaculture at global, national and state levels and its significance over agriculture .

Co2: Acquire knowledge in the different types of aquaculture, culture systems and culture methods in practice worldwide.

CO3: Gain knowledge in the different types of culture ponds.

Co4: Understand the arrangement of different types of ponds in a fish farm and design an ideal fish farm

CO5: Comprehend the best management practices to be adopted in aquaculture for good yield and acquire the skill in the analysis of water and soil parameters of a culture pond.

SYLLABUS

UNIT-I (Introduction)

1. Definition and History of Aquaculture
2. Concept of Blue Revolution and Pradhan Mantri Matsya Sampada Yojana (PMMSY)
3. Present status of Aquaculture at global level, India and Andhra Pradesh
4. Aquaculture versus Agriculture; Present day needs with special reference to Andhra Pradesh

UNIT-II (Types of Fish Ponds)

1. Lotic and lentic systems, streams and springs
   Classification of ponds based on water resources – spring, rain water, flood water, well water and water course ponds
2. Functional classification of ponds – head pond, hatchery, nursery, rearing, production and stocking
3. ponds; quarantine ponds, isolation ponds and wintering ponds

UNIT- III (Design and Construction of Aqua Farms)

1. Important factors in the construction of an ideal fish pond – site selection, topography, nature of the soil, water resources
2. Lay out and arrangement of ponds in a fish farm
3. construction of an ideal fish pond – space allocation, structure and components of barrage Pond

UNIT-IV (Aquaculture Systems and Practices)

1. Types of aquaculture Fresh water aquaculture - Brackish water aquaculture - Mari culture
2. Aquaculture Systems – Pond, Raceways, Cage, Pen, Rafts, Running water, Water Recirculating Systems, Biofloc Technology and 3-C System
3. Pond culture practices- Traditional, Extensive, Modified Extensive, Semi-Intensive, Intensive & Super-intensive systems of fish and shrimp and their significance.
4. Fin fish culture methods - Monoculture, Poly culture and Monosex culture and Integrated fish farming.

UNIT-V (Management Factors of Culture Ponds, Pre-stocking Management

1. Dewatering, drying, ploughing/desilting
2. Predators, weeds and weed fish in culture ponds - Advantages and disadvantages of weed plants; Toxins used for weed control and control of predators. Liming and fertilization;
3. Algal blooms and their control
4. Stocking Management – Stocking density and stocking
5. Post-stocking ManagementFeeding: Role of nutrients
6. Water quality: Physico-chemical conditions of soil and water optimum for culture – temperature, depth, turbidity, light, water and shore currents, PH, DOD, CO_2, NH_3, NO_2

III SEMESTER

Course No.: 5 - Basic Principles of Aquaculture

credits :1

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1. Estimation of Carbonates, Bicarbonates in watersamples
2. Estimation of DissolvedOxygen
3. Estimation of Ammonia in water.
4. Estimation of Total Hardness of water sample.
5. Study of beneficial and harmful algal species
6. Collection, identification and isolation of zooplankton and phytoplankton
7 Collection and study of aquaticweeds, aquatic insects, weed fish and larvivorous fish
8. Field visit to hatchery, nursery, rearing and stocking ponds of aqua farms.

PRESCRIBED BOOKS:

1. Jhingran VG 1998. Fish and Fisheries of India. Hindusthan Publishing Corporation,New Delhi
2. Pillay TVR, 1996. Aquaculture Principles and Practices, Fishing News Books Ltd., London

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1. Pillay TVR &M.A.Dill, 1979. Advances in Aquaculture. Fishing News BooksLtd., London
2. Stickney RR 1979. Principles of Warm Water Aquaculture. John Wiley & SonsInc. 1981

3. Boyd CE 1982. Water Quality Management for Pond Fish Culture. Elsivier Scientific Publishing
4. Bose AN et.al, 1991. Costal Aquaculture Engineering. Oxford & IBH Publishing Company.

REFERENCES

1. Boyd CE. 1979. *Water Quality in Warm Water Fish Ponds*. Auburn University

2. Boyd, CE. 1982. *Water Quality Management for Pond Fish Culture.* Elsevier Sci. Publ. Co.

3. FAO. 2007. *Manual on Freshwater Prawn Farming*.